

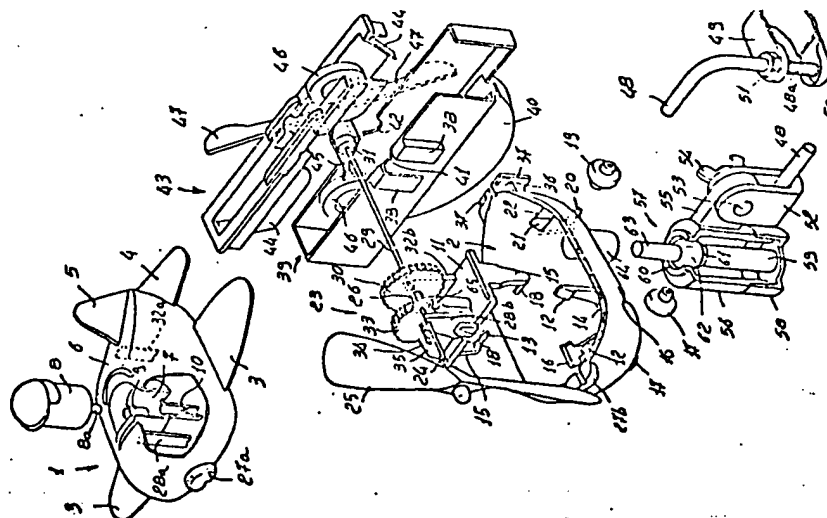
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 Toy aeroplane for emitting bubbles - has rings mounted on arms  
 rotated by airscrew for alternate dipping in pan of bubble-  
 forming liquid

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The toy aeroplane for emitting bubbles comprises a shaped body (1,2) with a rod (48) for securement to a vehicle, such as a bicycle. An airscrew (25) is rotatably mounted on the body. A pan (39) rigid with the body contains a bubble-forming liquid. Arms (45) carrying peripheral rings (46) for retaining the liquid are rotatably supported near the pan.

A transmission device is interposed between the airscrew and the arms, such that the arms are rotated by the airscrew. The rings are thus alternately dipped in the pan of liquid and raised out of the pan, when the liquid is blown from them by the air flow past the vehicle, to form bubbles. (13pp Dwg.No.1/1)

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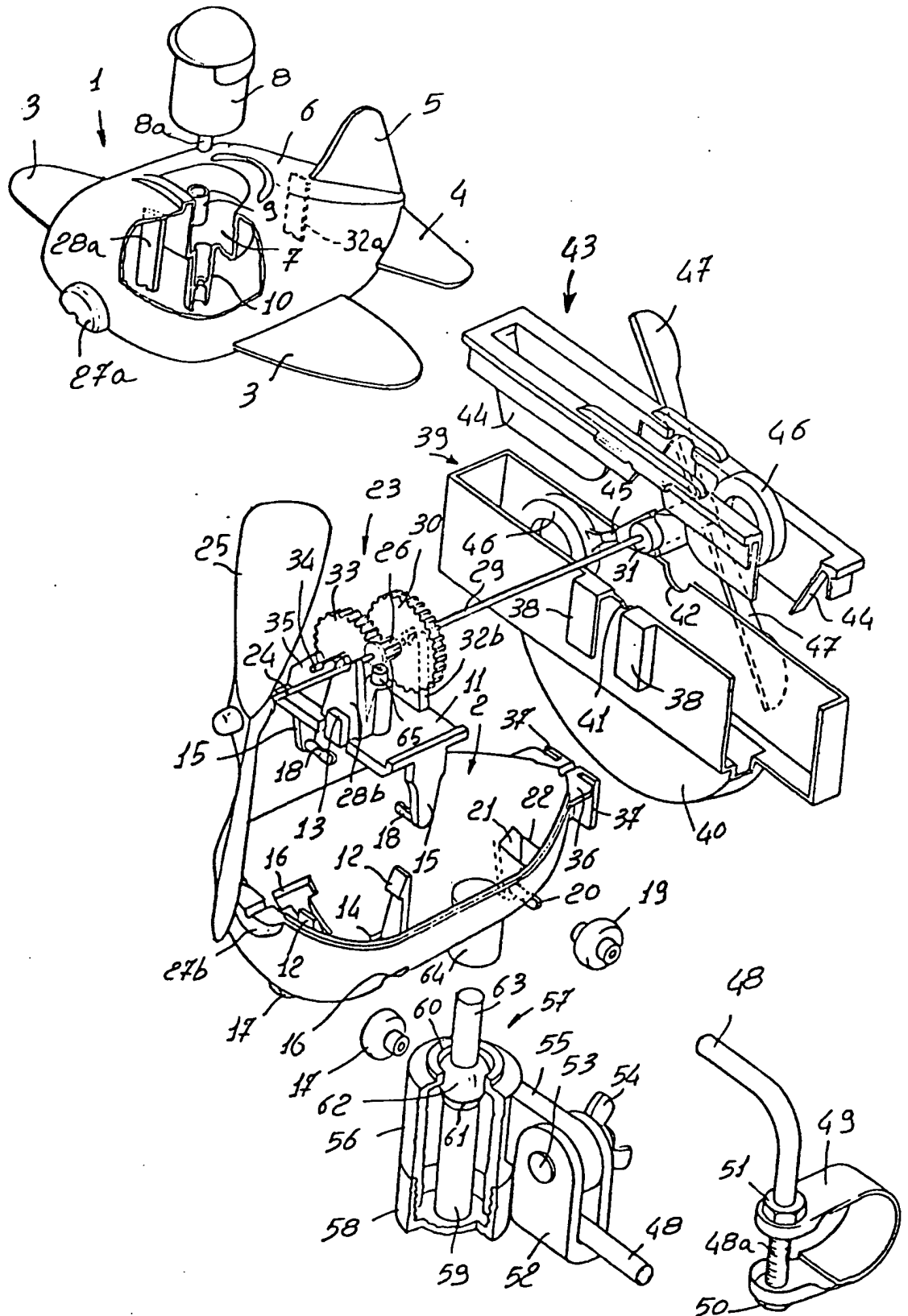
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(54) **Toy airplane emitting bubbles of the type of soap bubbles.**

(57) This toy airplane comprises a shaped body (1,2), means (48) adapted to lock the latter to a vehicle such as a bicycle, an airscrew (25) mounted rotatably on the front of the body (1,2), a pan (39) defined rearwardly and transversely to the body (1,2) and intended for containing the bubble forming liquid, arm members (45) carrying at the periphery thereof rings (46) adapted for retaining the bubble forming liquid and carried rotatably at the top of the pan (39) and transversely to the body (1,2), and a kinematic linkage interposed between the airscrew (25) and arm members (45).

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TOY AIRPLANE EMITTING BUBBLES OF THE TYPE OF SOAP  
BUBBLES" 0094532

This invention relates to a toy airplane for emitting bubbles of the type of soap bubbles.

It is known that playing with soap bubbles is still a widespread recreation, for the emission of such bubbles blow rings being usually utilized which, when dipped into a special liquid, are effective to retain said liquid; the user, by blowing from his/her mouth onto the ring, causes one or more bubbles to issue therefrom. Such blow rings, which require direct operation by the user, can only afford, however, limited playing potential to children, to whom they are specially directed, thereby there is a need for association of bubble emitting with new forms of play.

Thus, the task of this invention is to provide a toy airplane, whereby bubbles of the type of soap bubbles can be emitted in a substantially continuous fashion and without requiring direct operation by the user.

Within that task it is an object of the invention to provide a toy airplane which is of simple design, easy and safe to use, and of relatively low cost.

According to one aspect of the invention the above task and object are achieved by a toy airplane for emitting bubbles of the type of soap bubbles, characterized in that it comprises a shaped body, means adapted to secure the latter to a vehicle, an airscrew mounted rotatable on said body, a pan rigid with said body and intended to contain a bubble forming liquid therein, arm members carrying peripheral rings adapted to retain said liquid and being supported rotatably near said pan so as to cause said rings to be alterna-

cockpit at a recess 7, wherein a substantially cylindrical block 8 is partly accommodated; the block has formed at its bottom the peg 8a, which is intended for a pressure fit in some form of a tube 9 extending  
5 upwardly from the bottom of the hollow 7; the upper portion of the block 8, with the latter so inserted, is intended to protrude from the cup 1 and represent the face of the airplane pilot. At a position remote from the tube 9, the bottom of the hollow 7 is also  
10 affected by some form of a well 10, the function whereof will be explained hereinafter. A base 11 is secured within the front portion of the cup 2; to this end two hooks 12, which extend upwardly from the bottom of the cup, are adapted to snap engage elastically  
15 with respective serrations 13 defined by the base and to hold the latter abutted against the cup. The hooks 12 are arranged to face each other on said longitudinal plane of the airplane and are at the edges of respective slots 14 of the bottom of the  
20 cup 2; it is, in fact, contemplated that the cup 2 (like, after all, the cup 1 and base 11) be molded from a plastic material, and accordingly, the slots 14 allows that, with the same molding operation as the cup, the hooks be formed. As shown, the serrations 13 are  
25 formed at the center of the sides which the base 14 presents transverse to the airplane. At the two other sides of its, the base has respective lugs 15, facing downwards. By passing through respective shaped slots 16 formed in the cup 2, the lugs 15 locate themselves  
30 below the cup, so as to carry rotatably respective

The bosses 27a-b and flange 28a-b form, however, shoulders for the hub of the airscrew 25 and pinion gear 26, thereby the shaft 24 is locked in the axial direction.

5 The output of the reduction gear 23 is provided by a shaft 29 which has its axis in common with the shaft 24 and is located at the rear of the latter, being also thin and made of metal. At its front end, the shaft 29 has a gear wheel 30 rigid therewith, and at  
10 its rear end, which extends outside the body 1-2, it has an elongate hub 31 rigid therewith. In the proximities of the wheel 30, the shaft 29 is rotatably coupled to the free ends of two flanges 32a, 32b; similarly to the flanges 28a and 28b, the flange 32a  
15 extends from the cup 1 and the flange 32b extends from the rear side of the base 11 adjacently the flange 32a. In addition to the pinion gear 26 and wheel 30, the reduction gear 23 comprises a wheel 33, which meshes with the pinion gear 26 and is made rigid with  
20 a small shaft 34 extending parallel to the shafts 24 and 29, laterally below them. The shaft 34 is supported rotatably by a pair of flanges 35 which extend from the base 11 upwards, and carries a pinion gear, not shown in the drawing, rigid therewith  
25 and meshing with the wheel 30. In the proximities of the hub 31, the shaft 29 is passed through and engages pivotally with some form of a bushing, which comprises two corresponding bosses formed rearwardly by the edges of the cups 1 and 2; of such bosses, the drawing  
30 figure only shows that relative to the cup 2, which is

of the pan 39, a dial arrangement is rigid with the hub 31, which particularly comprises two diametrically opposed arms 45; each arm is terminated with a respective ring 46. In a conventional fashion not shown, the surfaces the blow rings 46 are machined to form fins defining a series of capillary channels which are effective, after the rings have been dipped into the bubble forming liquid, to retain said liquid. Directly behind the pan 39, the hub 31 has a series of vanes 47 rigid therewith which are angularly offset with respect to the rings 46; in particular, the vanes 47 are two diametrically opposed vanes aligned perpendicularly to the arms 45. The vanes are intended to skim the rear wall of the upper portion of the pan 39.

The toy airplane is intended for cantilever installation on a vehicle, such as a bicycle. The means for securing the airplane to a vehicle include an arm 48 formed from wire rod. A first end of the arm 48 is provided with a mount, e.g. for attachment to the handle bars of the bicycle; that end is, in fact, bent downwards and terminated with a threaded portion 48a, which is passed through the arms of an elastic strap 49. The strap is arranged to surround an area of the bicycle handle bars, the arm 48 being substantially parallel to the handle bars; the strap is then secured by acting on the nut 50, which is threaded onto the free extremity of the portion 48a, and thus urging the strap arms toward the shoulder formed by the other nut 51, which is located at the

threaded in some form of a small tube 65 extending upwards from the base 11.

The operation of the toy airplane may be readily appreciated from the foregoing description. As the  
5 bicycle on which the airplane is cantilever mounted is cause to move, the airscrew 25 meets a flow of air and is rotated; owing to its size, the airscrew power is adequate to drive, by suitable reduction through the reduction gear 23, the rings 46 and vanes 47.  
10 Alternately, the rings are dipped into the liquid contained in the pan 39 and raised above the latter where they are swept by the air stream, which meets favorably the sloping flattening 6. Owing to the flow of air through the rings, long bubble trains are  
15 emitted. Thus, with this toy, the bubbles are formed in a substantially continuous fashion and without conventionally blowing directly by the user. The vanes 47 keep the rear surface of the pan clean, preventing such a froth build-up as could otherwise inhibit the  
20 formation of the bubbles. It should be noted that the provision of the lip 44 on the pan 39 prevents the bubble generating liquid from flowing out of it even where the vehicle, owing to irregularity of its motion, subjects the toy airplane to shaking and  
25 tilting or other movements.

Of course, it should be clear that the airplane parts may be made distinguishable by different colors and its body may have sticker decoration applied.

In practicing the invention, the materials used,  
30 shapes and dimensions, may be any selected ones to meet individual requirements.



6 whereby the rotational speed imparted to said arms  
7 (45) is lower than that of said airscrew (25).

1 4. A toy airplane according to Claim 1, character-  
2 ized in that rigid with said arms (45) are a series  
3 of vanes (47), arranged behind said pan (39) and being  
4 angularly offset with respect to said rings (46), which  
5 vanes (47) are adapted to wipe the rear wall of said  
6 pan (39).

1 5. A toy airplane according to Claim 1, character-  
2 ized in that said securing means (48) comprise a shank  
3 (63) extending from said body (1,2), an arm having at  
4 a first end a mount for attachment to said vehicle,  
5 a ball-joint support (62) interposed between said  
6 shank (63) and the other end of said arm and being  
7 lockable in a desired angular position.

1 6. A toy airplane for emitting bubbles of the  
2 type of soap bubbles, according to the preceding  
3 claims and substantially as herein described and  
4 illustrated.